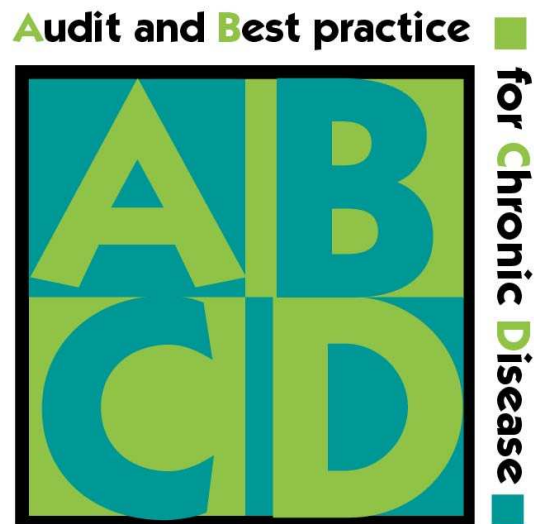


Audit and Best Practice for Chronic Disease



Project Final Report

February 2007



Authors

This report has been prepared by Ross Bailie, Damin Si, Michelle Dowden, and Katrina Lonergan on behalf of the ABCD project team.

Acknowledgments

ABCD began as a collaboration between Menzies School of Health Research (MSHR), the NT Department of Health and Community Services (DHCS), the Cooperative Research Centre for Aboriginal Health (CRAH), and a range of Government and Aboriginal community controlled health centres in the Top End of the Northern Territory. Initial funding support was provided by the Australian Health Ministers Advisory Council through the States and Commonwealth Research Issues Forum (SCRIF). Since then additional funding has been provided by the CRAH and the Australian Government. Ross Bailie is supported by an NHMRC Senior Research Fellowship (No 283303).

The success of the project has been a result of the support and collaboration of a number of organisations, including in particular the staff and management of community health centres involved in ABCD, and more recently the staff and management of health centres in other regions.

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Contents

1	Key findings and lessons	4
2	Background and setting.....	5
3	Continuous quality improvement and the ABCD approach.....	7
	3.1 Continuous quality improvement (CQI).....	7
	3.2 The ABCD approach	7
4	The Assessment Process	9
	4.1 The clinical record audits.....	9
	4.2 The health centre systems assessment	10
	4.3 The community context	10
5	Data analysis, feedback, goal setting and planning.....	11
6	Results and interpretation	12
	6.1 Summary of key results	12
	6.2 Improvement of health centre systems.....	13
	6.3 Improvement in quality of diabetes care	14
	6.4 Delivery of well adult (preventive) services.....	24
7	Discussion	28

Table 1	Key indicators for ABCD project.....	12
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Figure 1	Distribution of 12 participating Aboriginal community health centres.....	6
Figure 2	ABCD annual cycles	8
Figure 3	Improvement of system components over study period.....	13
Figure 4	Variation of system improvements across the 12 health centres.....	14
Figure 5	Overall delivery of diabetes services.....	15
Figure 6	Attendance at the health centres by people with diabetes.....	16
Figure 7	Reasons for last attendance	17
Figure 8	Change in delivery of basic measurements over the study period.....	18
Figure 9	Change in delivery of eye examinations over the study period.....	18
Figure 10	Change in delivery of feet examinations over the study period.....	19
Figure 11	Change in delivery of laboratory investigations over the study period	19
Figure 12	Change in delivery of Counselling/brief interventions	20
Figure 13	Change in delivery of vaccination over the study period.....	20
Figure 14	Change in pharmacological treatment of diabetes clients.....	21
Figure 15	Follow-up of abnormal HbA1c findings	22
Figure 16	Follow-up of abnormal blood pressure findings	22
Figure 17	Percentage of patients with good control of intermediate outcomes.....	23
Figure 18	Overall delivery of well person's services	24
Figure 19	Attendance at the Health Centre in the last 12 months.....	25
Figure 20	Reason for last attendance	25
Figure 21	Change in delivery of basic measurements	26
Figure 22	Change in delivery of laboratory investigations and vaccination.....	26
Figure 23	Change in delivery of Counselling Services.....	27

1 Key findings and lessons

Modern continuous quality improvement (CQI) approaches provide a theoretically coherent and highly acceptable framework for improving the quality of chronic illness care in Indigenous primary care services.

After two annual cycles of the CQI intervention, 12 participating Aboriginal community health centres have maintained their active engagement in the project and achieved impressive improvement in a number of key indicators of the quality of chronic illness care. These include:

Systems development:

- improvements in all key aspects of systems to support chronic illness care for almost all participating centres;

Processes of care:

- improvement in percentage of scheduled diabetes services delivered from 30% at baseline to 52%;
- improvement in the proportion of people with diabetes with a record of a BP check within 3 months from 63% at baseline to 76%;
- improvement in the proportion of people with diabetes with a record of an HbA1c check within 6 months from 41% at baseline to 72%;

Intermediate outcomes of care:

- improvement in the proportion of people with diabetes whose most recent HbA1c check was <7% from 19% at baseline to 28%;
- improvement in the proportion of people with diabetes whose most recent total cholesterol was <4.0mmol/L from 23% at baseline to 30%.

There were some key indicators of diabetes care which did not show improvement, such as BP control. Furthermore, the delivery of preventive services to the general adult population showed almost no change.

Key lessons learned

- Feedback from health centre staff and management indicates that the facilitated, participatory approach to quality improvement and the system assessment tool are not only feasible and acceptable, but are highly valued in Aboriginal primary care settings.
- The successful actions and strategies for system change involved either increased resources or innovative activities that promoted and improved interaction between health care providers and patients.
- Health centre systems are amenable to improving the delivery of processes of diabetes care (testing, checking and screening) to a level which is comparable with or better than national data.
- There were significant system barriers to following up abnormal clinical findings and medication intensification, which limited translation of favourable levels of service delivery into improved patient outcomes.
- Health service providers appeared to focus on system changes related to chronic illness care as opposed to preventive services for generally well adults, and this appears to have contributed to the lack of improvement in delivery of preventive services.
- The ABCD approach provides a mechanism for integrated and ongoing evaluation and improvement of health service organisations and performance.

2 Background and setting

A major challenge in Indigenous health is to reverse the dramatic increase in the incidence of chronic diseases such as heart disease, diabetes, mental illness and renal disease ¹.

Evidence shows that:

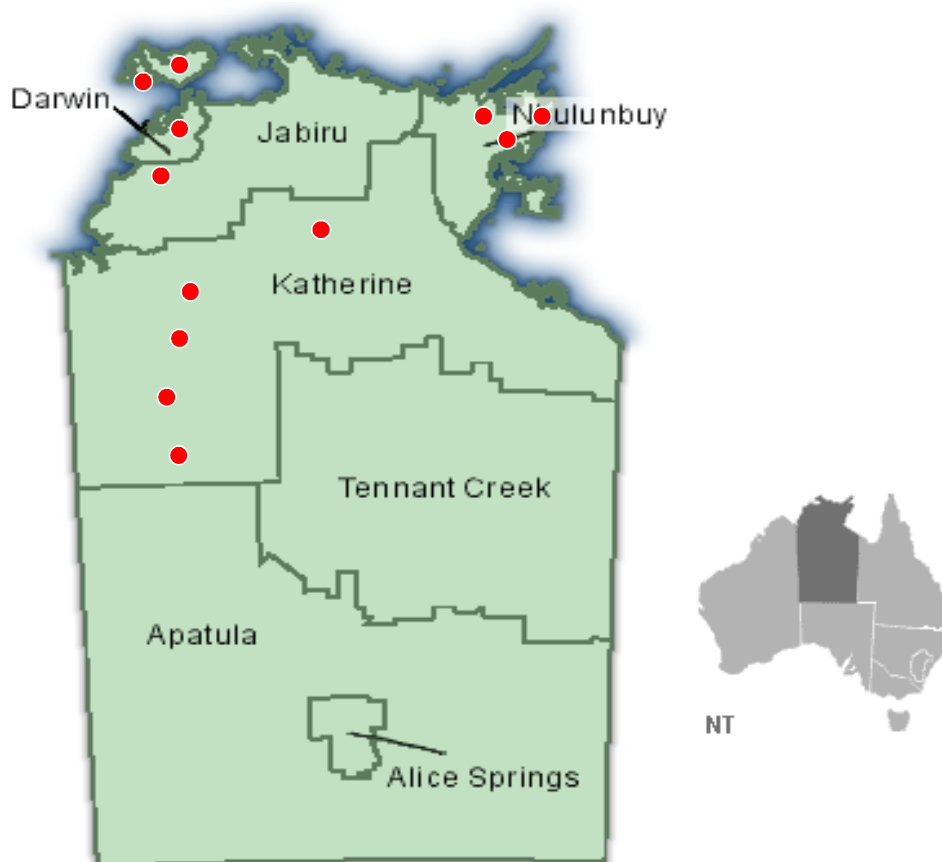
- early detection and good management of chronic illnesses, including medical treatment, self-management support, and regular follow-up results in better health outcomes ^{2,3}; and
- well organised systems of care, and not simply good individual health care workers, are important in achieving better health outcomes ⁴⁻⁶.

The Audit and Best practice for Chronic Disease (ABCD) project is a continuous quality improvement project that aims to improve health outcomes through assisting health services to improve their systems for delivery of best practice care. We use an action-research approach to work with health centre staff to identify strengths and weaknesses in their systems, set goals for improvement, develop strategies to achieve these goals and assess the effectiveness of these strategies in improving chronic illness care.

Project aim: To investigate the nature, use and impact of organisational systems (and activities) in and around remote Health Centres in relation to the prevention, early detection and management of chronic disease, and introduce a quality improvement process.

Our team started work on this project with 12 health centres in Aboriginal communities in the Top End of the Northern Territory in early 2002 (see Figure 1). We received a very enthusiastic response from communities to our invitation to be involved in the study. The 12 participating health centres were selected to reflect the diversity of communities in terms of population size, health centre governance arrangements and geographic location.

Figure 1 Distribution of 12 participating Aboriginal community health centres



All 12 health centres have continued to be enthusiastic about their involvement over the course of the project. In 2005, work commenced to extend ABCD to primary care services in Central Australia, WA, NSW and Queensland.

Two annual cycles of assessment, feedback, action planning, implementation, and reassessment have been completed in all of the health centres. Over the course of this process we have seen improvements in:

- health centre systems (such as clarification of roles and responsibilities for chronic illness care),
- delivery of services according to best practice guidelines (such as more regular monitoring of blood pressure and HbA1c), and
- intermediate outcome measures (such as better control of HbA1c and cholesterol).

This report describes the approach we use and the results we have achieved. We also discuss key lessons from the experience of this project, and our plans for the future.

3 Continuous quality improvement and the ABCD approach

3.1 Continuous quality improvement (CQI)

Continuous Quality Improvement (CQI) in health care is defined as ‘a structured organisational process for involving personnel in planning and executing a continuous stream of improvements in systems in order to provide quality health care that meets or exceeds customer expectations.’⁷.

In the context of chronic conditions, applying CQI requires the health care workforce to

- be clear about the outcomes they are working towards;
- know what changes will lead to improvements;
- know how to evaluate their efforts;
- translate evidence from their own and others’ experience into practice;⁸

While modern quality improvement is still based on the classical Plan - Do - Study – Act (PDSA) cycle, the emphasis is now on^{9,10}:

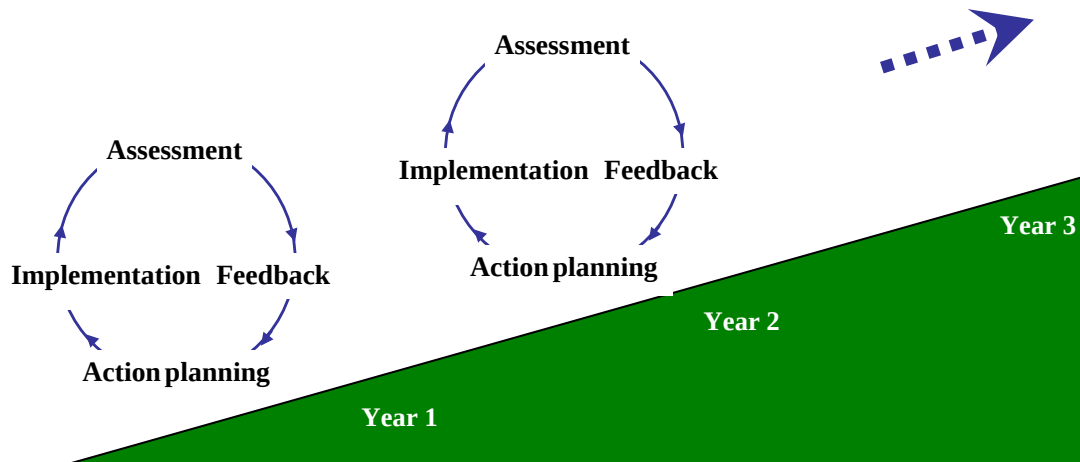
- raising the general level of care rather than focusing on pockets of poor practice;
- improving the organisation and systems of care; and
- revising processes of care based on good data and understanding about the processes themselves.¹¹⁻¹³

CQI concepts and techniques provide a theoretically coherent and practical way for services to organise themselves to identify, address, and overcome the barriers to improvements in service delivery^{14,15}. The CQI approach allows for building of systematic improvements in a way that encourages local ownership and the potential to meet specific local needs necessary to achieve and maintain improvement.

3.2 The ABCD approach

Based on the classic PDSA cycle, we used an adapted cycle of assessment, feedback, action planning and implementation. The steps of the cycle are outlined in Figure 2. The teams (composed of researchers and health centre staff) do not start by trying to fix problems, but by gathering data, both on the quality of care and status of systems, in order to identify areas in the systems contributing to suboptimal quality of care. The cycle is run on an annual basis. After the first cycle is completed, a new cycle is started, reflecting a dynamic and continuing effort to achieve better results.

Figure 2 ABCD annual cycles



Our approach is to work in collaboration with interested health service organisations to:

- Assess how well the delivery of clinical services matches recognised best practice guidelines;
- Assess how well health centre systems support delivery of high quality clinical services;
- Provide information from these assessments to health centre staff and management in a meaningful way;
- Assist health centre staff to set goals and develop strategies to improve health centre systems and delivery of care;
- Review progress, goals and strategies each year; and
- Encourage the development of systems and a culture of continuous quality improvement.

Through this approach, we:

- support local initiatives to achieve better health outcomes;
- provide useful information to health centre staff, health boards, management, and others;
- foster best practice for the prevention, early detection and management of chronic disease; and
- share ideas and lessons for improving chronic illness care among a wide range of interested people and organisations.

4 The Assessment Process

The key assessments include audits of clinical records and assessment of organisational systems.

4.1 The clinical record audits

ABCD has focused on the delivery of services for

- a. prevention and early detection of chronic illness in the general adult population; and
- b. care of people known to have diabetes.

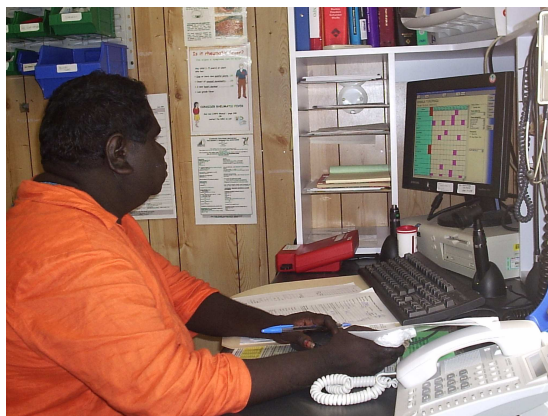
We conduct an audit of the clinical records of a sample of people in each of the above two groups. We generally use a sample size of 30 people in each group in each community, as we have found this number to give a good balance between obtaining a reasonable estimate of patterns of care and what is feasible within resource constraints.

We have developed clear protocols for drawing these samples, and these have been found to work well in a variety of clinic circumstances.

The audit forms include a range of specific services commonly recommended in best practice guidelines. Both paper-based medical records and computerised information systems are audited. We have developed detailed protocols to support the use of these audit forms and conducted several training workshops on the use of these tools with health service staff. With this training, health staff have found the process easy to follow and several health services have conducted the audits themselves.



Lyn O'Donoghue, ABCD project officer, drawing medical records from a health centre filing system.



Rrapa Dhurrkay, an AHW and ABCD team member, extracting data from a computerised system in a health centre.

4.2 The health centre systems assessment

The system assessment tool that we use is based on a scale that incorporates a number of system components which have been found to be important in achieving high quality care for people with chronic conditions. We have adapted the original Assessment of Chronic Illness Care (ACIC) scale for use in Indigenous primary care settings ¹⁶.

The six components of the ACIC scale are derived from the Chronic Care Model (<http://www.improvingchroniccare.org/change/index.html>) ¹⁷⁻¹⁹. These components are:

- Organisational influence;
- External linkages;
- Self-management support;
- Delivery system design;
- Decision support; and
- Clinical information systems.

We use the adapted ACIC scale in consultation with health centre staff to assess the state of development of systems within the health centre. In our experience of using this scale in the ABCD project over the past three years we have found it to be *very useful in assisting health staff to assess their systems, to identify priorities for improvement and to monitor progress towards achieving their goals.*

The adapted ACIC scale covers the range from limited to optimal support. It is unlikely that any Health Centre anywhere in the world could consistently achieve the highest possible score across all components of the scale. This approach of including the absolute ideal in the scale is intended to provide guidance for improvement over time. The scores for participating Health Centres should be interpreted in this context. In many respects the health centres participating in ABCD are operating at a level that is comparable with many primary care facilities in first world settings.

4.3 The community context

In addition to the ACIC scale, we use a mail out survey form and interviews to collect data on the community population size and other community and health centre contextual factors.

5 Data analysis, feedback, goal setting and planning

For the ABCD Project, we have analysed all the data at a central location and prepared reports for feedback to the participating health centres. We generally mail the reports about a week prior to our team visiting the health centre to facilitate a workshop on the interpretation of the findings.

The reports provide a comprehensive picture of the performance of the health centre in delivering best practice care and of the state of development of systems to support delivery of care. They include an analysis of trends over time and a comparison with the performance of other (de-identified) participating health centres.

The purpose of the feedback workshops with community health centre staff is primarily to:

- promote health staff and community understanding of the extent of diabetes in their community population, and of what constitutes best practice care; and
- discuss how well the health centre is doing in delivery of best practice care, how well different systems and strategies are contributing to best practice, what are the barriers to improvement and how these can be overcome.
- help health centre staff set goals for system changes. Health centres are encouraged to explore various options and new ways to improve system functions, and then to select priority areas for action that best fit their situation.

The participating health service teams have been very enthusiastic and responsive about the assessment and feedback process as a way of finding out about how they are delivering preventive and diabetes care services. The reports are highly valued as the health service teams can see the results of their efforts. A number of health centres have used the reports to develop local community stories to share with community members and agencies, and to talk about how they can influence health services for better diabetes care in the population.

In order to support other health centres to use the ABCD audit and system assessment tools we have developed an access database that automatically generates reports on data that is collected and entered by health centre staff. Based on our experience of ABCD it appears to be important that health centres using this approach find ways to get some external input into the interpretation of the reports and to share lessons for improvement with other health centres taking this approach.

The principles and values underpinning our approach include ²⁰:

- Ensuring a shared understanding of the roles and responsibilities of the ABCD team and of the staff and management of participating health centres;
- An active, participatory approach and two way information sharing;
- A high standard of quality in clinical audits, system assessments, data analysis, feedback and documentation;
- Building on existing knowledge in health centres;
- Coordinate with other related health centre projects;
- Support the development of learning environments ²¹;
- Work together with health staff with due consideration to competing demands and limited resources;

6 Results and interpretation

6.1 Summary of key results

The summary table of the key indicators included below shows significant improvement over two cycles of assessment and feedback in:

- systems development,
- diabetes service delivery and
- intermediate diabetes outcomes.

The table also shows minimal improvement in delivery of preventive services, highlighting the need for more work in this area.

Table 1 Key indicators for ABCD project

Indicator	Round 1	Round 2	Round 3
Overall Systems Assessment Score (0-11)	3.9	5.3	6.3
Overall percentage of diabetes services delivered	30%	36%	52%
Percentage of people with diabetes with a record of a BP check within 3 months.	63%	63%	76%
Percentage of people with diabetes with BP control of:*			
<130/80mmHg	33%	33%	29%
<140/90mmHg	65%	58%	68%
Percentage of people with diabetes with a record of measurement of HbA1c within 6 months	41%	60%	72%
Percentage of people with diabetes with HbA1c control of:*			
<7%	19%	21%	28%
<8%	37%	41%	46%
Mean HbA1c	9.3%	8.9%	8.9%
Overall percentage of preventive services delivered to generally well adults	19%	19%	21%
Percentage of generally well adults with a record of measurement of BP within 12 months	46%	49%	48%

* these figures based on number of people with a result within the defined period

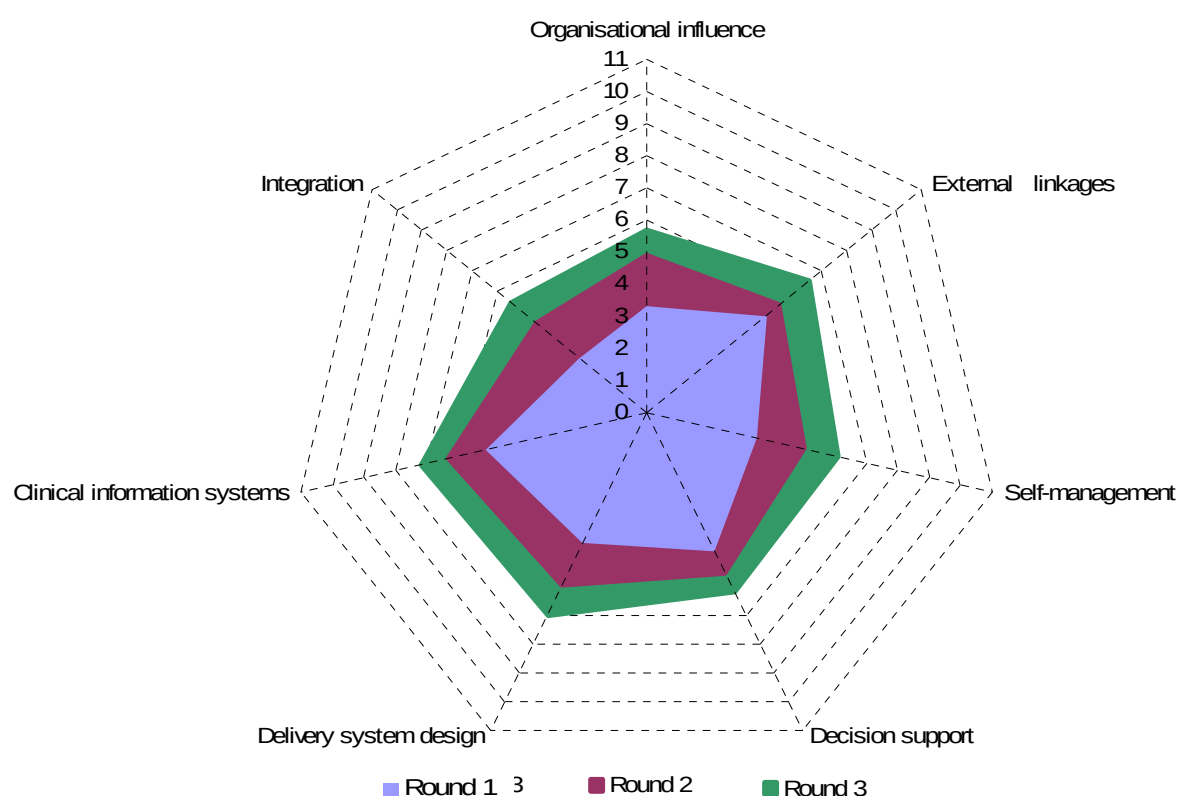
6.2 Improvement of health centre systems

The status of health centre system development can be depicted in the form of a spider or radar plot (see Figure 3) which shows the score for each system component on different arms of the plot, with the overall score being reflected by the size of the area encompassed by these points. Additional information is provided on each of the items making up each component of the systems assessment score.

Our analysis of the ABCD data shows there is a significant correlation between the system assessment scores, the extent of delivery of services against best practice guidelines and quality of control of HbA1c, BP, and cholesterol.

We encourage health centre staff to set goals for improvement of systems rather than specific clinical services, as improvements in systems are expected to result in improvements in a range of specific services.

Figure 3 Improvement of system components over study period



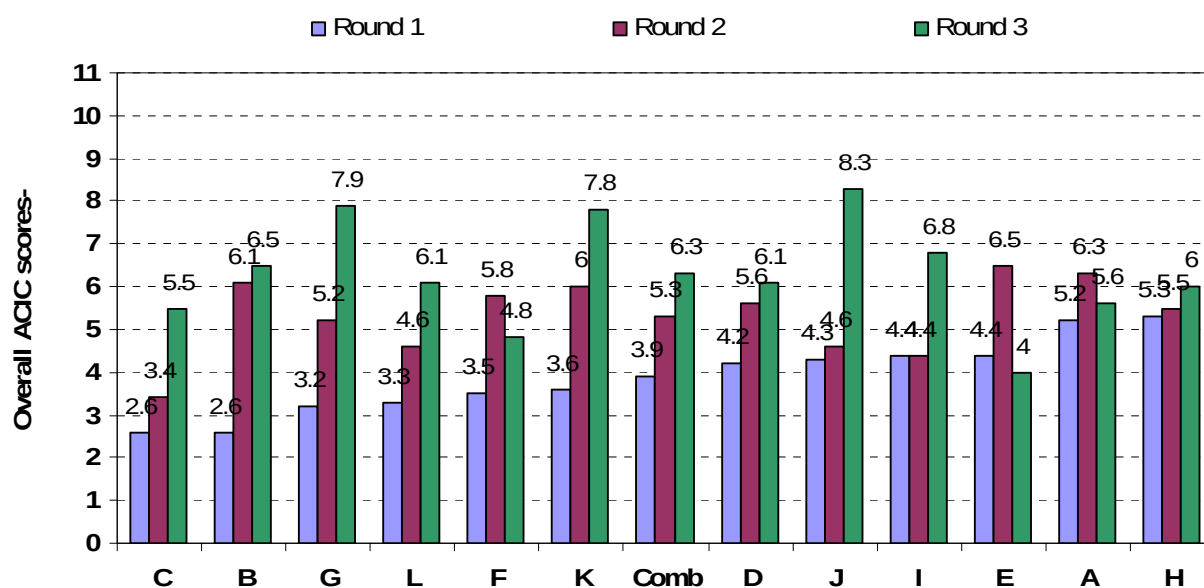
The above table and spider plot show that, generally, participating health centres experienced consistent improvements across different system components over the study period. What is not evident in the figure is the wide variability in improvement between different health centres. This variability in improvement has been a strength of the project in that it allows an analysis of the factors that account for the variation in performance and improvement.

A number of the graphs on the next few pages show data for each of the 12 participating health centres over the duration of the project.

Figure 4 below shows the overall ACIC score for each participating health centre and for all health centres combined. It can be seen that all health centres show some improvement, with some health centres showing over 100% improvement.

During the course of the study, health centre staff initiated and implemented a broad range of actions to change their systems (relevant qualitative data will be reported elsewhere). The successful actions involved either increased resources or innovative activities that promoted and improved interaction between health care providers and patients.

Figure 4 Variation of system improvements across the 12 health centres



Health centres are listed in increasing order of round 1 scores.
 "Comb" represents combined data for all 12 health centres.

6.3 Improvement in quality of diabetes care

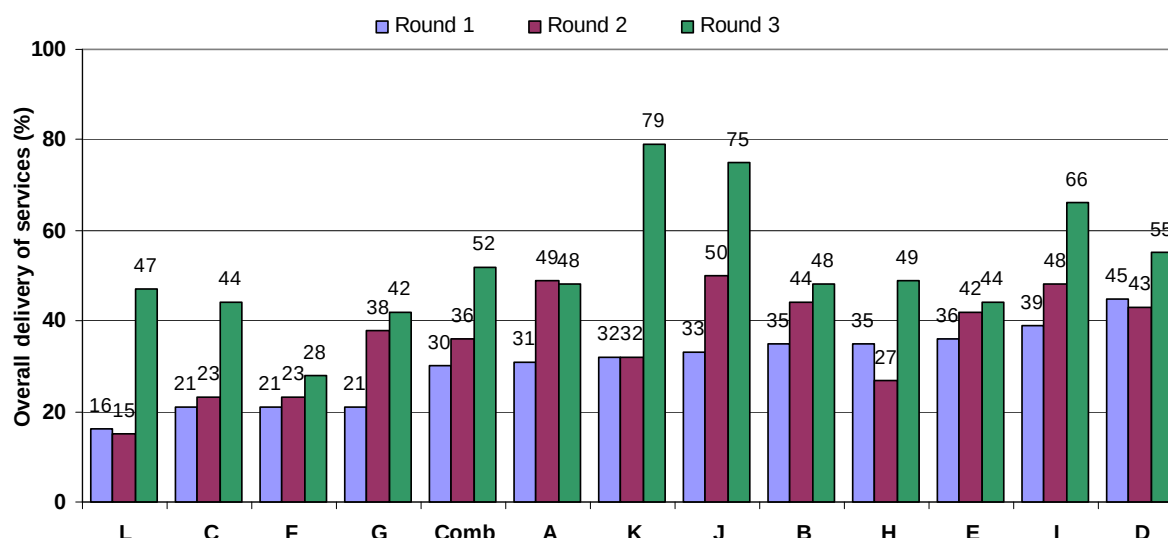
6.3.1 Overall percentage of diabetes services delivered

According to clinical guidelines in wide use in the NT (the CARPA Guidelines, version 4), clients with diabetes should have the following items of services every three months: basic measurements (such as weight, BP, BMI), feet checks, counselling on diet, activity, smoking, alcohol and diabetes control/medications. Diabetes patients should have an HbA1c test every six months. They should also have the following services every year: eye check, Albumin Creatinine Ratio (ACR), fasting lipids, total cholesterol and creatinine and flu vaccination. Pneumococcal vaccination is recommended every five years for people living in the communities.

The overall percentage of diabetes services delivered refers to the average percentage of scheduled diabetes services delivered to each person included in the diabetes audits.

In our reports to each health centre we also provide data on the delivery of each of the specific services so that they can see the specific services for which they are doing relatively well or relatively poorly.

Figure 5 Overall delivery of diabetes services



Health centres are listed in increasing order of round 1 data.
 "Comb" represents combined data for all 12 health centres.

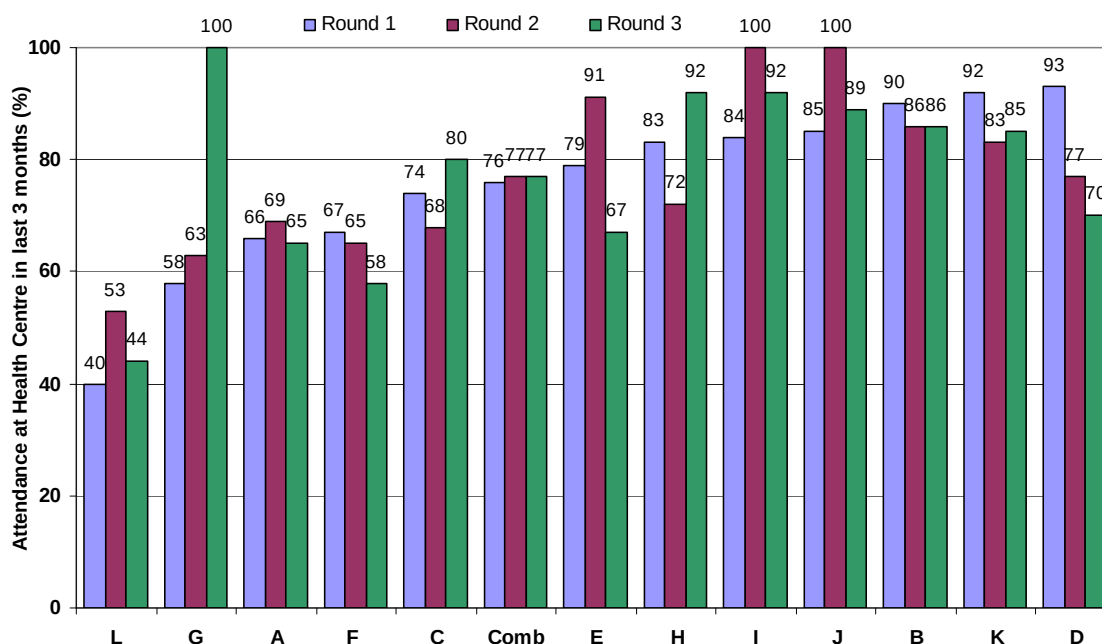
Figure 5 shows there has been improvement in the overall delivery of diabetes services across all of the communities. Some health centres have more than doubled the percentage of services delivered.

We recognise that different health centres operate in different environments, that the challenges to delivery of best practice care may be different, and that strategies to improve delivery of services may need to be tailored to specific circumstances. An illustration of the different environments in which health services operate is the variation in the attendance at the health centre by people in the service population.

Figure 6 below shows attendance at each of the health centres 3 months prior to the audit by people in the diabetes audit sample. There is wide variation in the level of attendance between health centres, and to some extent within the same health centre for different periods.

Patterns in the level of attendance may have important implications for the planning of strategies for improving delivery of care. For example, in a health centre which has a high level of attendance, but relatively low levels of delivery of scheduled services, the emphasis should perhaps be on ensuring people understand the need for and are offered scheduled services. Whereas in a health centre where levels of attendance are relatively low the emphasis may more appropriately be on encouraging regular attendance at the health centre to obtain scheduled services.

Figure 6 Attendance at the health centres by people with diabetes



Health centres are listed in increasing order of round 1 data.

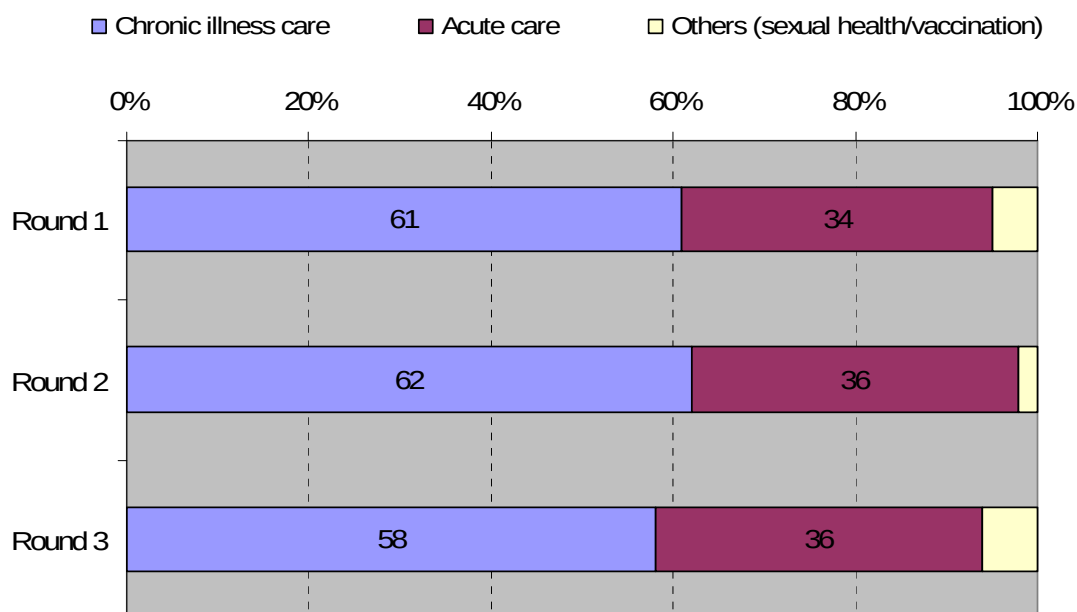
"Comb" represents combined data for all 12 health centres.

Overall the proportion of clients with diabetes who attended at participating health services over the three year study period was largely unchanged at around 77%. This means on average 77% of all clients with diabetes are attending the health service in a three month period.

If all of these people were offered and took up the scheduled services the overall level of service delivery would be around 77%.

Shown in Figure 7, the most common reason for the most recent attendance at the health centre has been for chronic illness care (about 60% of most recent attendances over the course of the project). Thus even people attending specifically for chronic illness care are not being offered or are not taking up the range of scheduled best practice services. The other major reason for attendance is for acute care. Even if a proportion of these people were encouraged to take up regularly scheduled chronic illness care services when they are attending for other reason the levels of delivery of services could be significantly improved.

Figure 7 Reasons for last attendance



6.3.2 Improvement in processes of diabetes care: specific services

Figure 8 -Figure 13 show change in delivery of specific diabetes services over the 3 year period. These services include basic measurements, eye examinations, feet examinations, laboratory investigations, counselling/brief interventions, and vaccination. Diabetes best practice clinical guidelines recommend that these services be delivered on a regular basis, such as 3 monthly, 6 monthly, or yearly (see appendix 1 for details).

Overall, these services achieved significant improvements over the study period, both for those with low level of delivery (eg feet examinations and counselling) at the baseline (round 1) and for those with relatively high level of delivery (eg laboratory investigations and flu vaccination).

Figure 8 Change in delivery of basic measurements over the study period

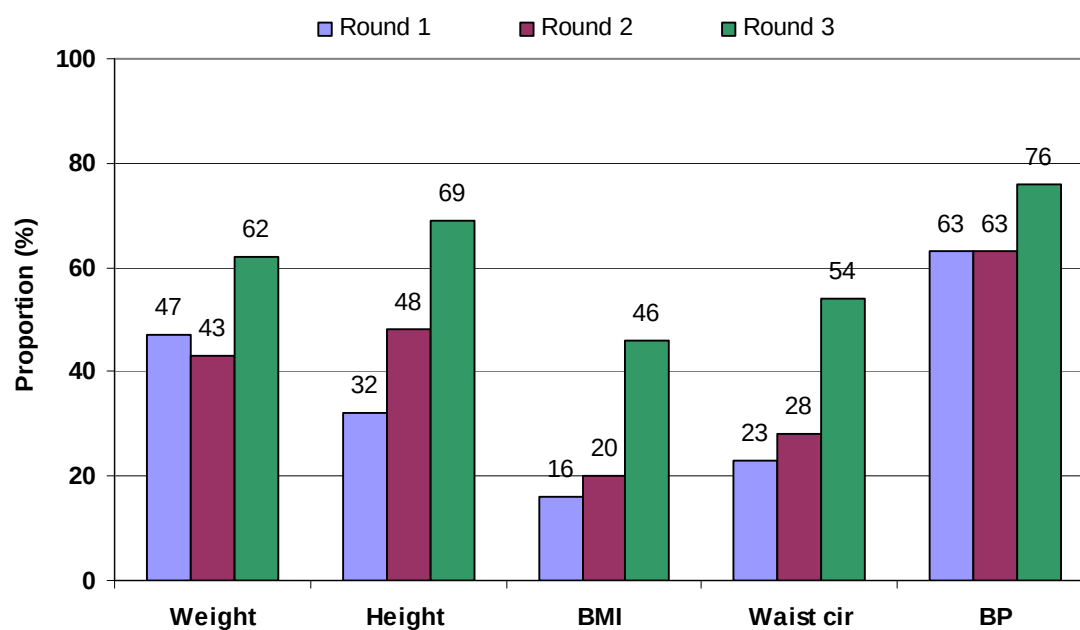


Figure 9 Change in delivery of eye examinations over the study period

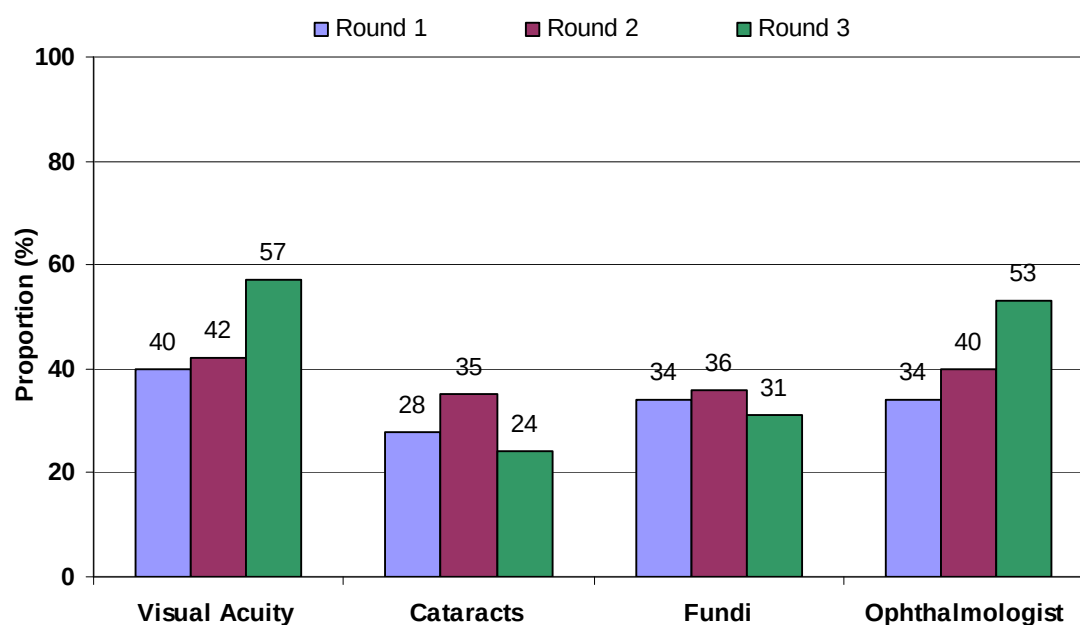


Figure 10 Change in delivery of feet examinations over the study period

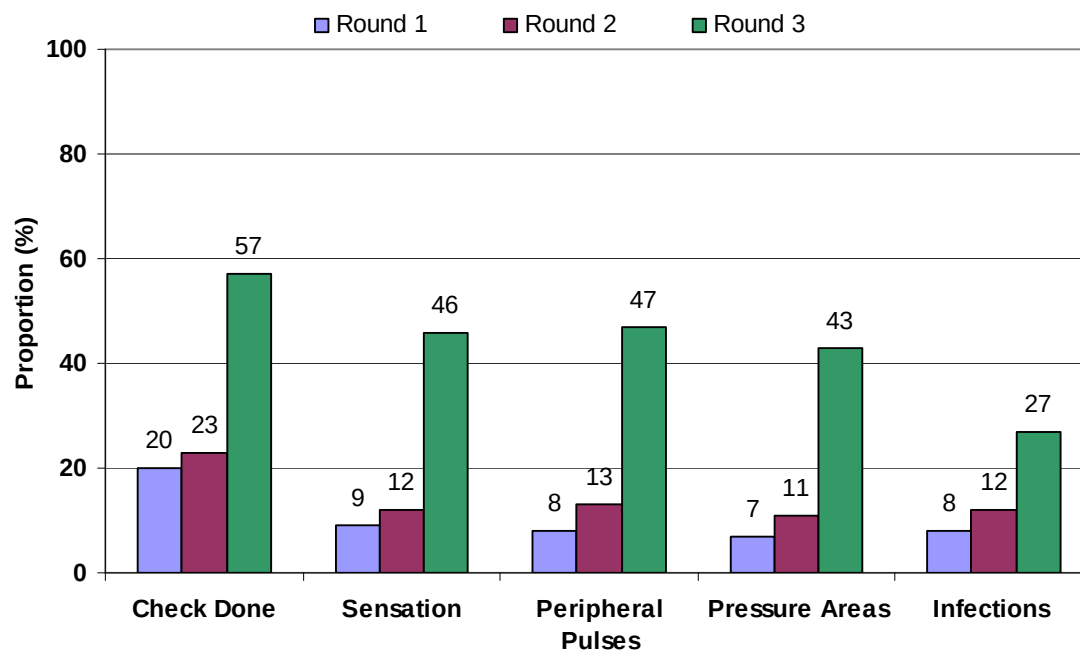


Figure 11 Change in delivery of laboratory investigations over the study period

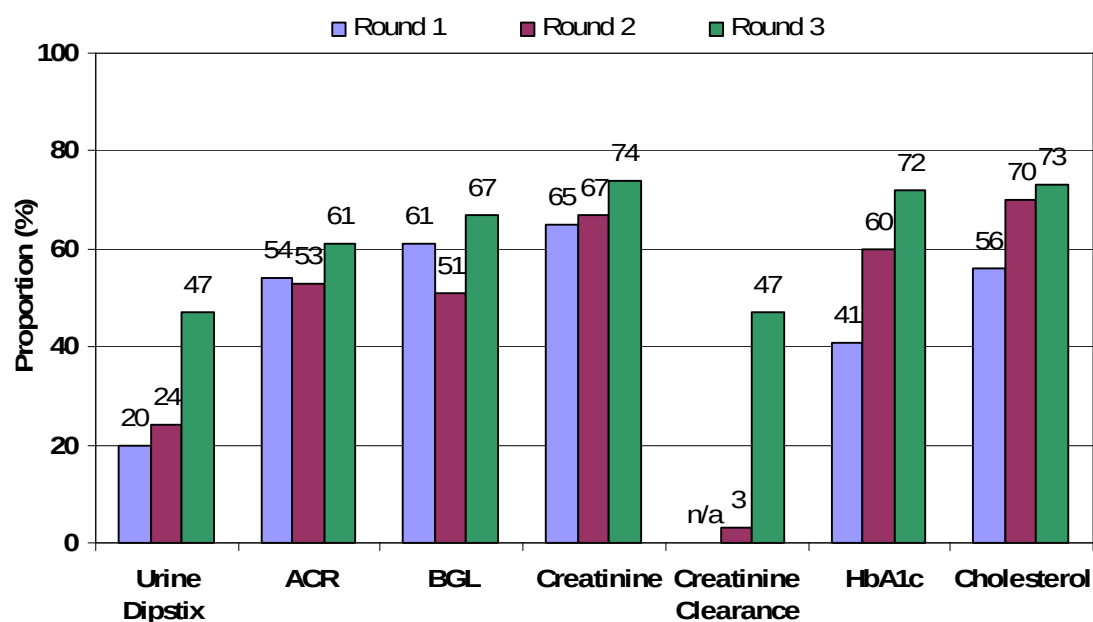


Figure 12 Change in delivery of Counselling/brief interventions

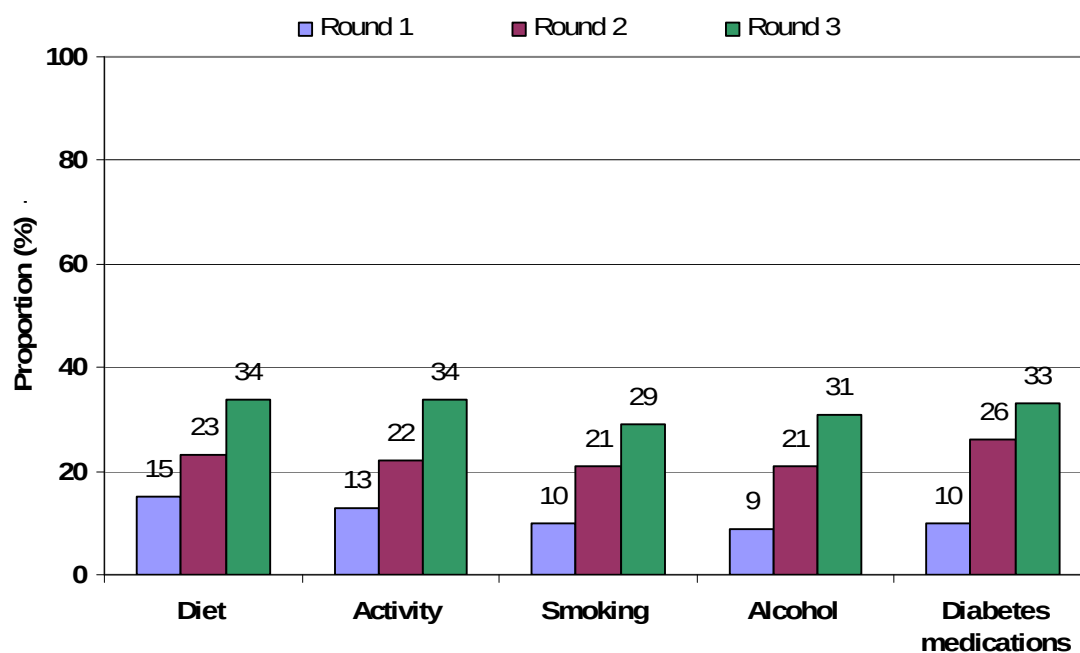
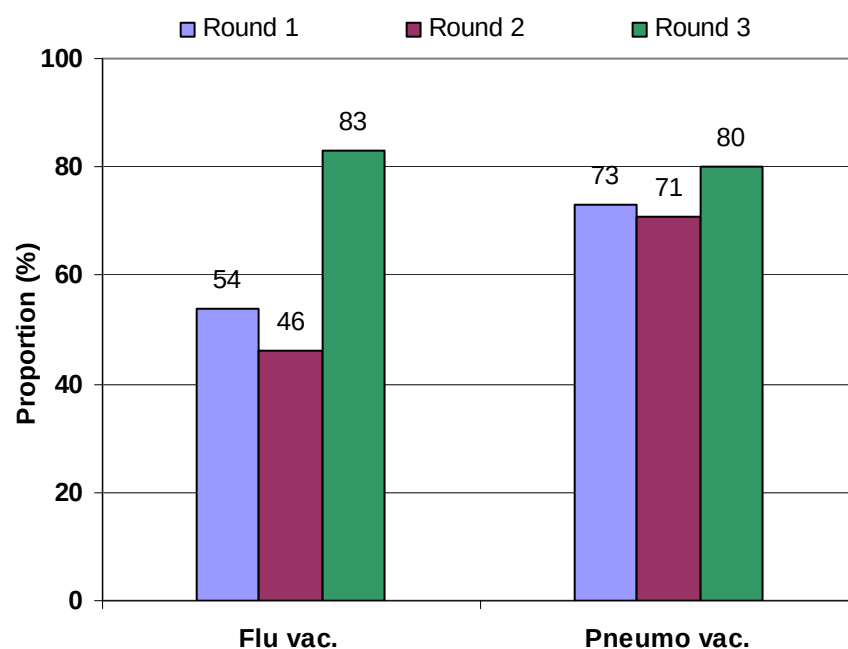
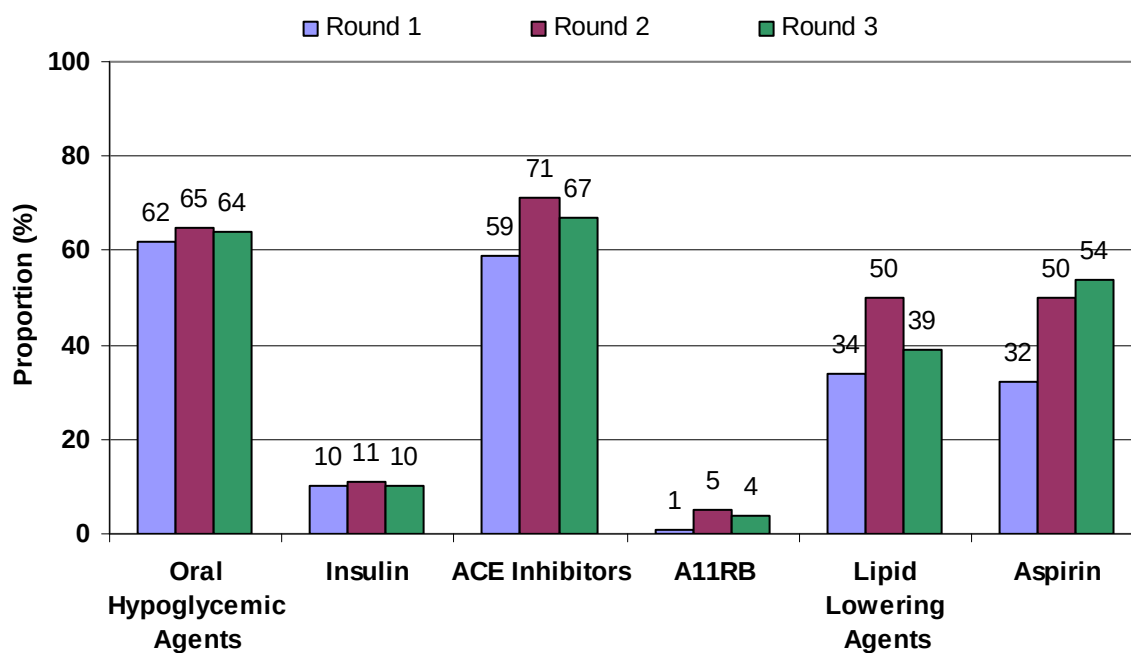


Figure 13 Change in delivery of vaccination over the study period



Appropriate pharmacological treatment has an important role in achieving adequate control of glycaemia, blood pressure and cholesterol, the key mechanisms leading to reduced risk of diabetes complications. Shown in Figure 14, the proportion of patients treated by oral hypoglycaemic agents and insulin over the study period was largely unchanged. The proportion of patients who received ACE inhibitors and lipid lowering agents increased at the round 2 audit, followed by a decrease at round 3. There was consistent increase in prescription of aspirin to patients over the course of study.

Figure 14 Change in pharmacological treatment of diabetes clients



Based on documentation in medical records, after identification of elevated HbA1c and BP, there was an increase in numbers of elevated results reviewed by a doctor, and consequently, an increase in medication adjustment rates at the round 2 audit (Figure 15 and Figure 16). However, these improvements were not maintained at round 3 follow-up. There was a significant drop in reviewing elevated results and medication adjustment at round 3 audit, to below the baseline level.

Figure 15 Follow-up of abnormal HbA1c findings

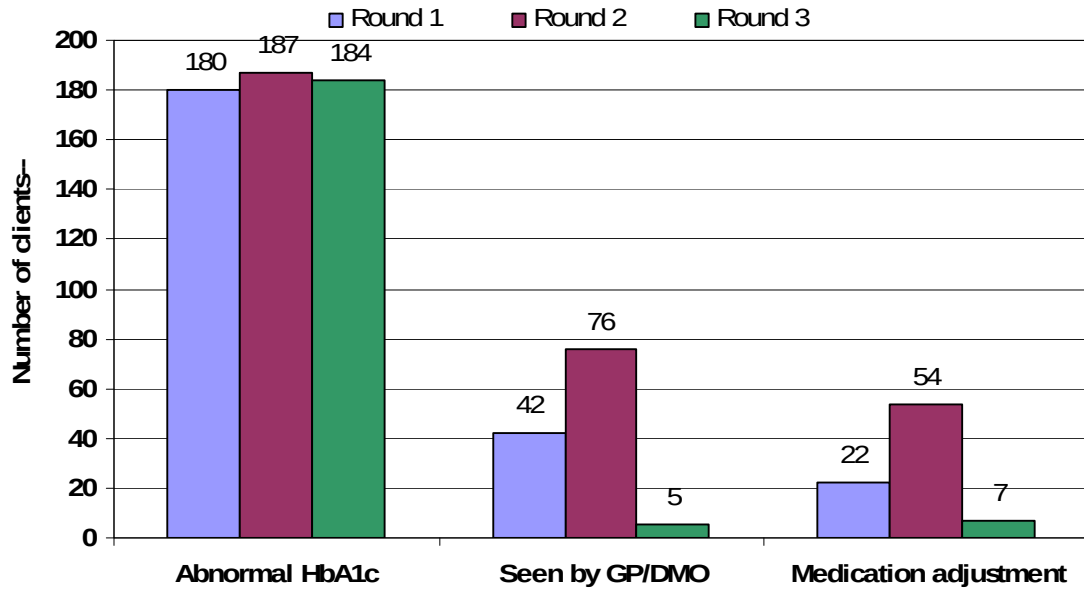
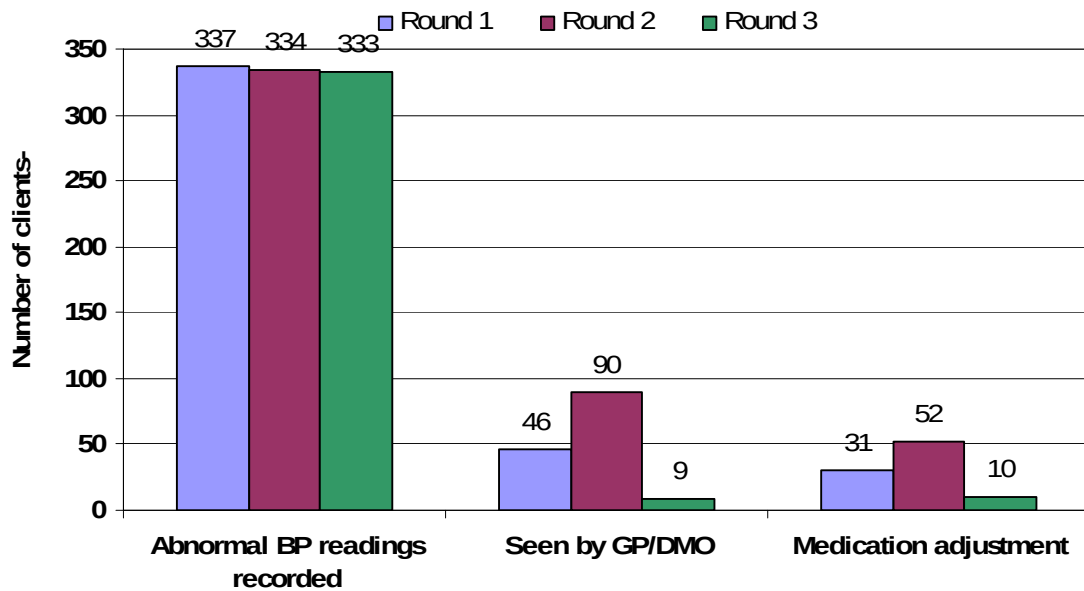


Figure 16 Follow-up of abnormal blood pressure findings

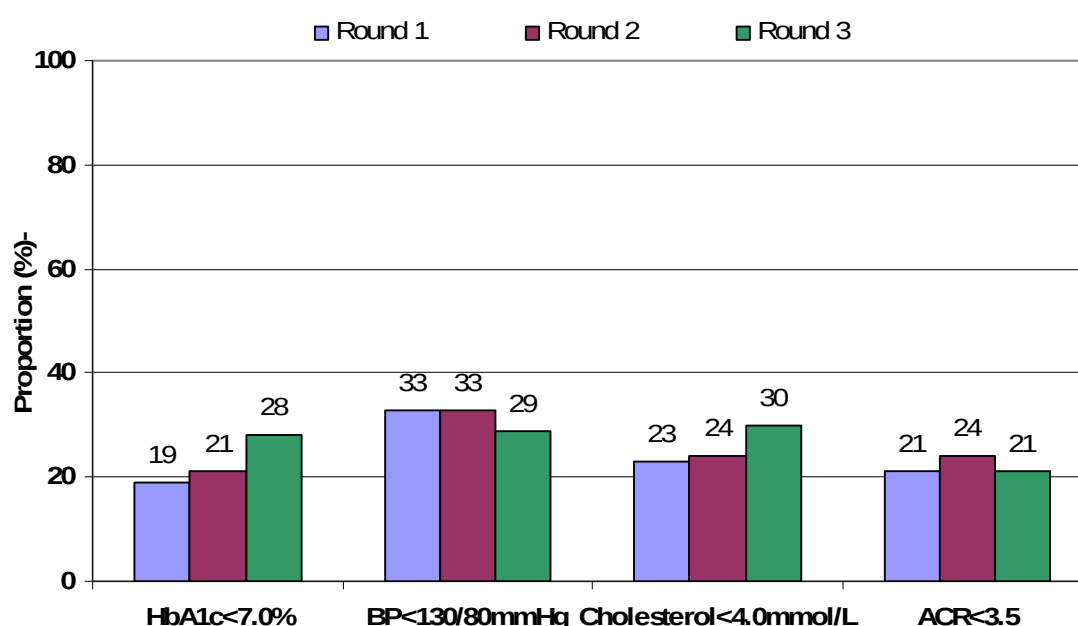


6.3.3 Improvement of intermediate outcomes for people with diabetes

By 'intermediate outcomes' we mean control of blood pressure, blood glucose (as reflected in HbA1c), total cholesterol, and maintenance of kidney function (measured by ACR). Control of blood pressure, blood sugar, and blood lipids are very important in preventing complications from diabetes such as stroke, heart and renal disease^{22,23}.

Figure 17 below shows improvement in the percentage of people whose most recent HbA1c level meets the target of <7% and whose most recent total cholesterol meets the target level of <4.0 mmol/L. The figure shows a 40-50% improvement from the baseline for these two indicators. The level of improvement varies markedly between health centres (data not included in this report).

Figure 17 Percentage of patients with good control of intermediate outcomes



In contrast to HbA1c and total cholesterol control, there has been no improvement in the percentage of people achieving the target blood pressure of <130/80 and the target of renal function control. However, some health centres did achieve marked improvement. Again, comparison between health centres and between general approaches to HbA1c control compared to blood pressure control may provide some leads in developing more effective strategies to achieve improvements in blood pressure control.

6.4 Delivery of well adult (preventive) services

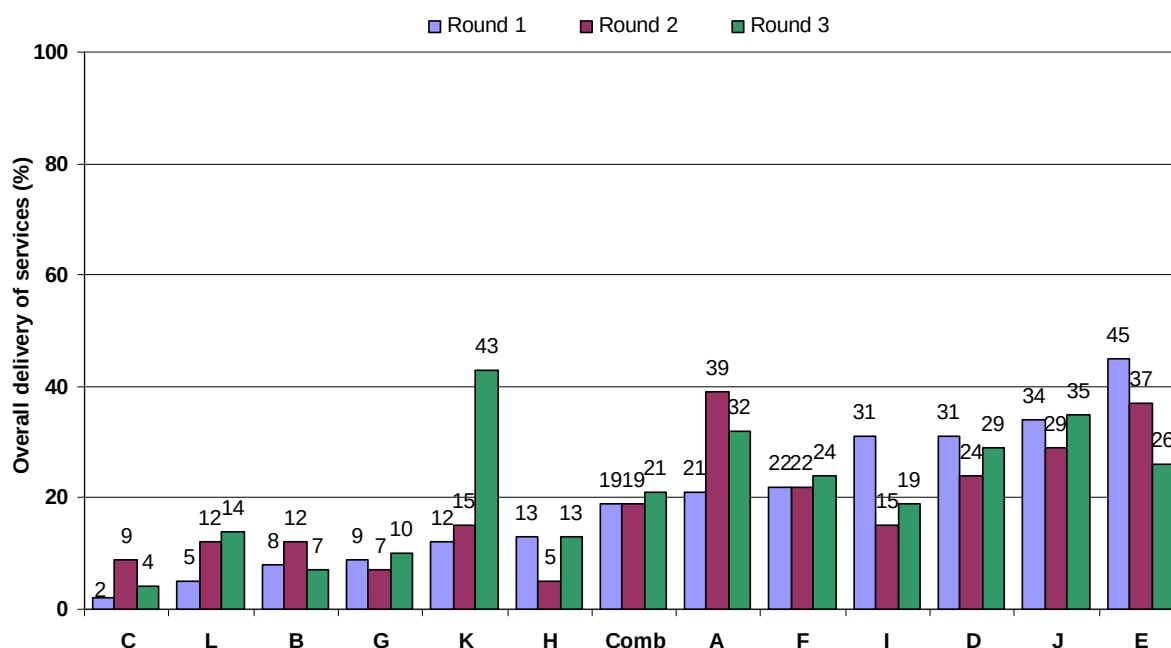
According to the CARPA guidelines clients in the 16 – 49 year age range who are generally well (i.e. those people who are not known to have a diagnosis of a major chronic illness) should receive the following services every 12 months: basic measurements such as weight, BMI and blood pressure, and counselling or brief intervention on diet, activity, smoking and alcohol.

The overall percentage of preventive services delivered refers to the average percentage of scheduled preventive services delivered to people included in the well adult audits for all participating health centres.

In our reports to each health centre we also provide data on the delivery of each of the specific preventive services so health staff can see the specific services for which they are doing relatively well or relatively poorly.

Figure 18 shows that a few health centres achieved improvement from baseline, but for most there has been little change or even a decline. This failure to achieve an improvement together with the generally low level of delivery of these services presents a particular challenge. We are working on strategies to assess and strengthen systems to support delivery of these services.

Figure 18 Overall delivery of well person's services

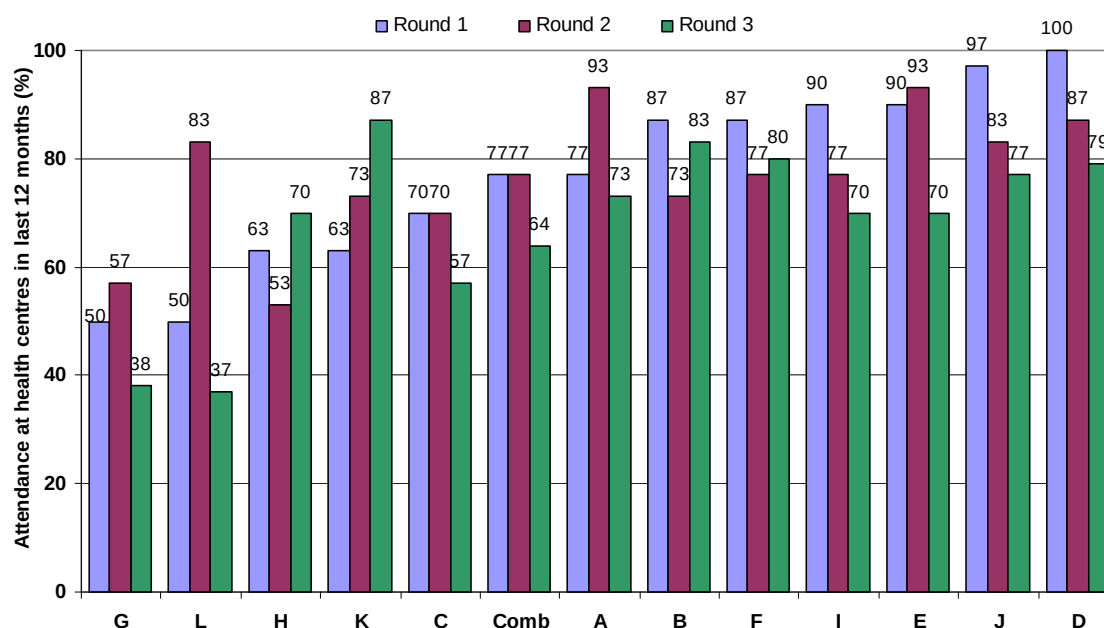


Health centres are listed in increasing order of round 1 data.
 "Comb" represents combined data for all 12 health centres.

The overall level of attendance at the participating health centres in the previous 12 months by adults with no diagnosed chronic illness has been around 70% across the duration of the project (Figure 19). So in general there should have been opportunities for delivery of these services.

Figure 19 shows the wide variation between health centres in the level of attendance, and again highlights the different circumstances in which health centres operate, and the point that different strategies may need to be adopted by different health centres.

Figure 19 Attendance at the Health Centre in the last 12 months



Health centres are listed in increasing order of round 1 data.
 "Comb" represents combined data for all 12 health centres.

As might be expected, by far the most common reason for attendance by the general adult population is for acute care (see Figure 20). However, some people have been attending for 'well person checks' and other reasons such as adult immunizations. Clearly health staff need to make better use of the opportunities presented by attendance for acute care, even if this is only to convince people of the value of coming back for a well person check.

Figure 20 Reason for last attendance

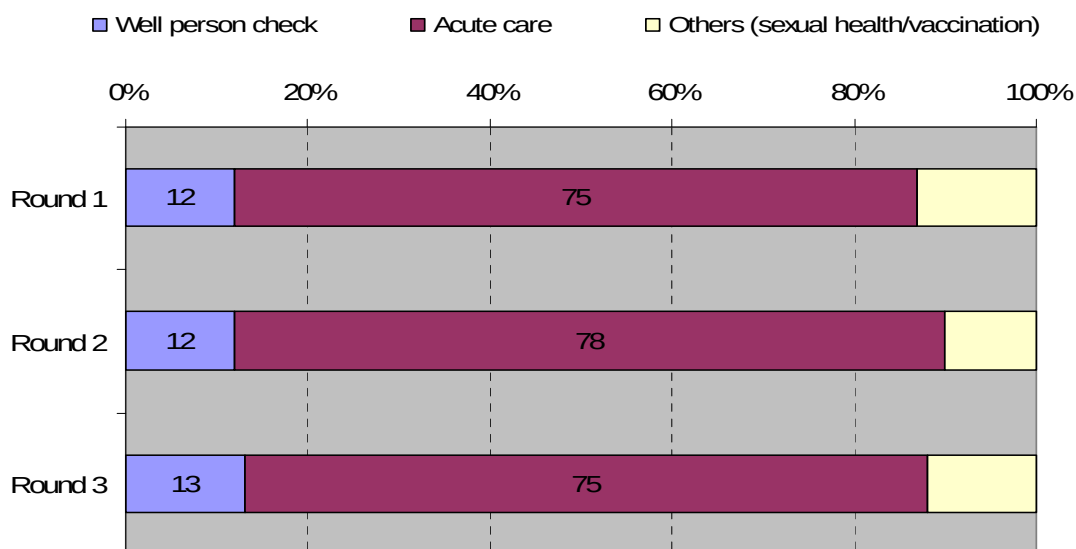


Figure 21 – Figure 23 show changes in delivery of specific preventive services over the study period. There was no apparent increase in delivery of basic measurements, laboratory investigations, or vaccination. Although there was an upward trend in delivery of counselling services, the levels of delivery were low (only around 10% at round 3).

Figure 21 Change in delivery of basic measurements

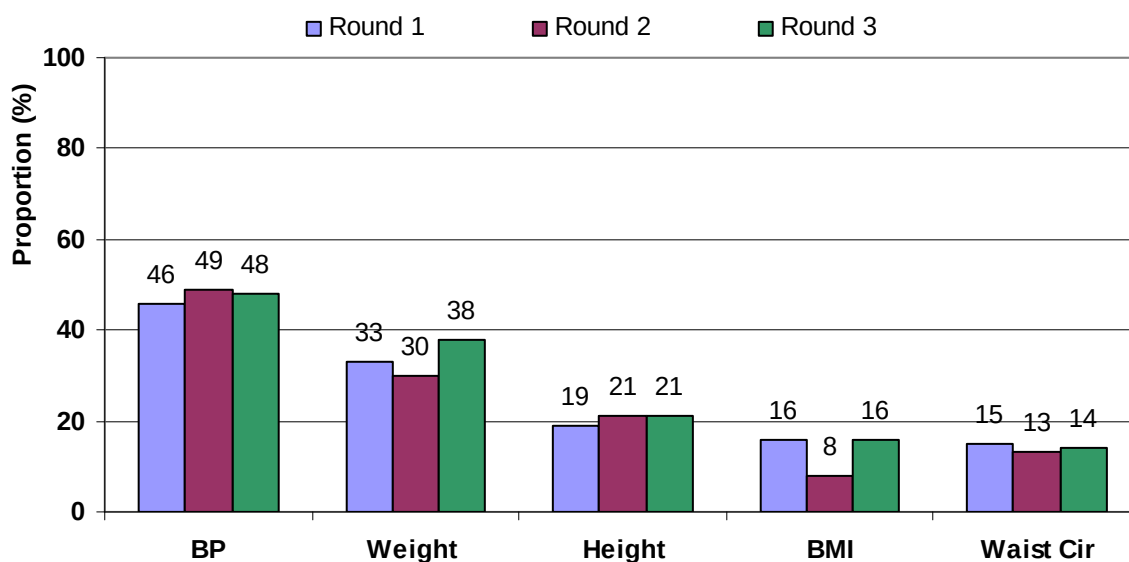


Figure 22 Change in delivery of laboratory investigations and vaccination

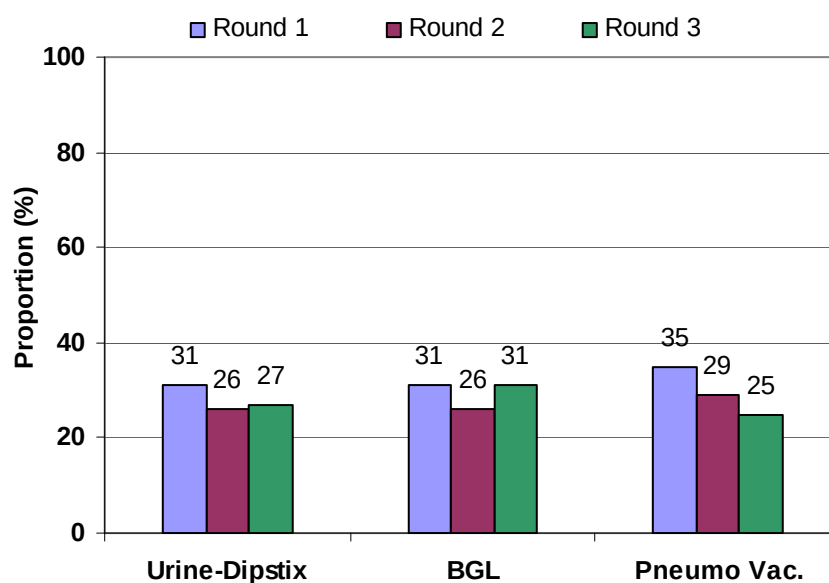
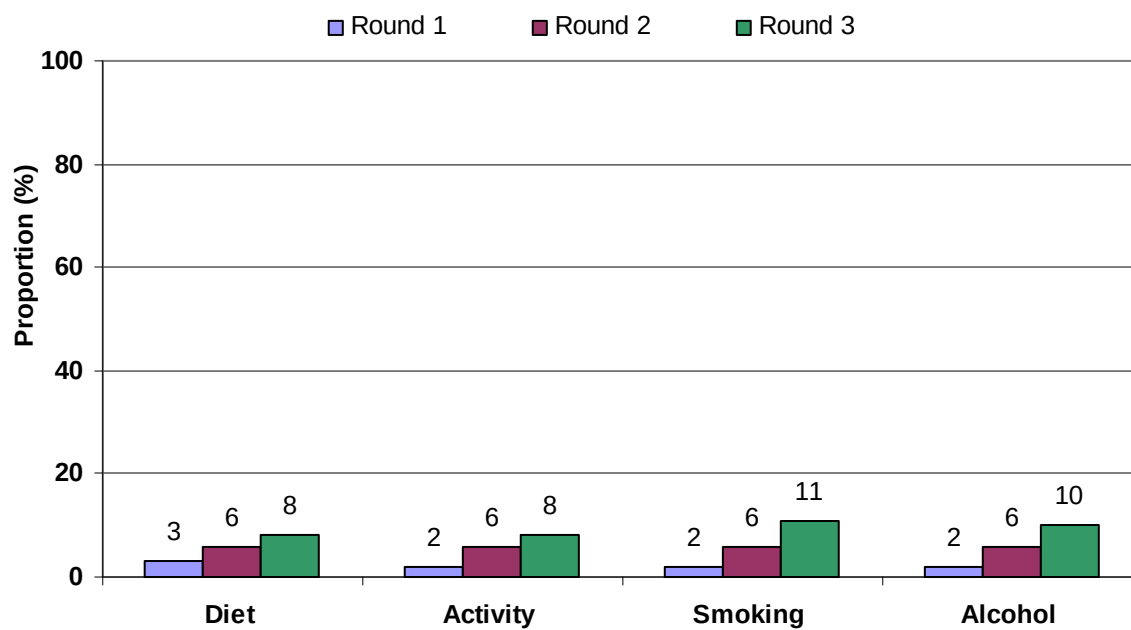


Figure 23 Change in delivery of Counselling Services



7 Discussion

This CQI intervention proved to be highly acceptable in the Indigenous primary care setting and has been associated with significant improvements in systems as reflected in the ACIC scores for all components of health centre systems. Over the same time there was an improvement in quality of diabetes care in terms of processes of care and some intermediate outcomes. However, improvements in diabetes care appeared to be limited by inadequate attention to abnormal clinical findings and medication adjustment. Furthermore, improvement in systems was not associated with delivery of preventive services to well adults.

Our findings on systems improvement are very similar to those found in the first of the “Breakthrough” series in the US.¹⁷ Improvements in key process measures in our study, including HbA1c and BP monitoring, were generally greater than for other interventions in similar settings in Australia.²⁴ Although diabetes patients in our study experienced moderate improvement in HbA1c and total cholesterol control, no significant improvement was found in BP control.

Difficulties in improving patient outcomes have been reported by studies focusing on diabetes quality improvement interventions in a variety of settings.²⁵⁻²⁹ Our findings confirm that inadequate medical review and medication adjustment following abnormal clinical findings and investigations is likely to be an important barrier to translating favourable levels of service delivery (eg regular HbA1c testing and blood pressure checking) into adequate metabolic control among patients. If future diabetes quality improvement interventions are expected to improve patient outcomes, medication adjustment measurements should be routinely included in the spectrum of quality of care measures, and barriers to making medical regimen changes in healthcare systems need to be identified and addressed.

Lessons learned

- Feedback from health centre staff and management indicates that the facilitated, participatory approach to quality improvement and the system assessment tool are not only feasible and acceptable, but are highly valued in Aboriginal primary care settings.
- The successful actions and strategies for system change involved either increased resources or innovative activities that promoted and improved interaction between health care providers and patients.
- Health centre systems are amenable to improving the delivery of processes of diabetes care (testing, checking and screening) to a level which is comparable with or better than national data.
- There were significant system barriers to following up abnormal clinical findings and medication intensification, which limited translation of favourable levels of service delivery into improved patient outcomes.
- Health service providers appeared to focus on system changes related to chronic illness care as opposed to preventive services for generally well adults, and this appears to have contributed to the lack of improvement in delivery of preventive services.

Research transfer

The ABCD project has made a significant contribution to the development and implementation of the national “Healthy for Life” program.³⁰ Announced in 2005 by the Commonwealth Department of Health and Ageing, the Healthy for Life program provides \$102.4 million over four years, aiming at enhancing the capacity of more than 80 Indigenous primary health care services to improve the quality of child and maternal health services and chronic disease care. Further refinement and modification of the system assessment tool and clinical audit forms used in this study have been included in the Healthy for Life toolkit for the participating sites to use. In addition, members of our research team have joined the panel of facilitators to assist organisations in undertaking quality improvement.

Future direction: the ABCD Extension (ABCDE) Project (www.abcdproject.org.au)

In 2006 we were awarded a five year grant by the CRC for Aboriginal Health to extend the ABCD project to other jurisdictions with a view to specifically investigating how the approaches we have developed for ABCD can be introduced and supported as routine practice in Indigenous primary care settings. We have also received funding from the Commonwealth Government to develop a training package to support the extension of the ABCD project.

The specific objectives of the new phase of the project are to:

- support the implementation of assessment tools that generate information for health services to engage in CQI activities
- increase the capacity of Indigenous health services to incorporate CQI activities into routine service activities
- increase the delivery of evidence-based services
- improve service delivery by facilitating development of more effective primary health care policy
- reduce chronic disease incidence, severity, complications and mortality, through the above four objectives.

We have been working with services in NSW, WA, SA, QLD and Central Australia to support the implementation of CQI with ABCD tools and processes.

Some important initiatives for this phase of the project have been:

- the development of an audit tool for mental health services;
- the development of an audit tool that covers the conditions that make up the ‘Vascular and Metabolic Syndrome’, including cardiovascular and renal disease and diabetes;
- the development of a systems assessment tool that provides for separate assessment of systems to support: 1) management of chronic illness; and 2) delivery of preventive clinical services.
- the development of a web-based information system to allow data entry and automated reporting at the regional or health service level. This system also includes features for the sharing of lessons among ‘communities of interest’ and for input from experts in the field. We will also use the web-based system to post resources and information for access by participating health services.

Advised by expert clinical groups, the audit tools have been refined and updated and are based on widely used best practice guidelines. Participating health centres will audit for diabetes services and well person's services (preventive services). In addition centres may choose to conduct a comprehensive vascular and metabolic syndrome audit, and, a mental health service audit. We also have plans to develop audit tools for environmental health and health promotion.

References

- (1) Thomson N. The health of Indigenous Australians. Melbourne: Oxford University Press, 2003.
- (2) Wagner EH. The role of patient care teams in chronic disease management. *BMJ* 2000; 320(7234):569-572.
- (3) Von Korff M, Gruman J, Schaefer J, Curry SJ, Wagner EH. Collaborative management of chronic illness. *Ann Intern Med* 1997; 127(12):1097-1102.
- (4) WHO. Innovative care for chronic conditions: building blocks for action. Geneva: WHO, 2002.
- (5) Institute of Medicine. Crossing the quality chasm. The National Academies Press, 2001.
- (6) Institute of Medicine. Crossing the quality chasm. The National Academies Press, 2001.
- (7) McLaughlin CP, Kaluzny AD. Continuous quality improvement in health care: theory, implementation, and applications. Gaithersburg: An Aspen Publication, 1994.
- (8) World Health Organisation (WHO). Preparing a health care workforce for the 21st century: the challenge of chronic conditions. 2005. World Health Organisation.
- (9) Shortell SM, Bennett CL, Byck GR. Assessing the impact of continuous quality improvement on clinical practice: what it will take to accelerate progress. *Milbank Q* 1998; 76(4):593-624, 510.
- (10) Blumenthal D, Kilo CM. A report card on continuous quality improvement. *Milbank Q* 1998; 76(4):625-48, 511.
- (11) Darling H. Continuous quality improvement: does it make a difference? *Milbank Q* 1998; 76(4):755-757.
- (12) Shortell SM, Bennett CL, Byck GR. Assessing the impact of continuous quality improvement on clinical practice: what it will take to accelerate progress. *Milbank Q* 1998; 76(4):593-624, 510.
- (13) Blumenthal D, Kilo CM. A report card on continuous quality improvement. *Milbank Q* 1998; 76(4):625-48, 511.
- (14) Clemmer TP, Spuhler VJ, Berwick DM, Nolan TW. Cooperation: the foundation of improvement. *Ann Intern Med* 1998; 128:1004-1009.
- (15) Berwick DM. Continuous improvement as an ideal in health care. *N Engl J Med* 1989; 320(1):53-56.
- (16) Si D, Bailie R, Connors C, Dowden M, Stewart A, Robinson G et al. Assessing health centre systems for guiding improvement in diabetes care. *BMC Health Serv Res* 2005; 5:56.

- (17) Wagner EH, Glasgow RE, Davis C, Bonomi AE, Provost L, McCulloch D et al. Quality improvement in chronic illness care: a collaborative approach. *Jt Comm J Qual Improv* 2001; 27(2):63-80.
- (18) Bonomi AE, Wagner EH, Glasgow RE, VonKorff M. Assessment of chronic illness care (ACIC): a practical tool to measure quality improvement. *Health Serv Res* 2002; 37(3):791-820.
- (19) Bonomi AE, Wagner EH, Glasgow RE, VonKorff M. Assessment of chronic illness care (ACIC): a practical tool to measure quality improvement. *Health Serv Res* 2002; 37(3):791-820.
- (20) lies V, Sutherland K. Organisational change: a review for health care managers, professionals and researchers.
http://www.sdo.lshtm.ac.uk/pdf/changemanagement_review.pdf . 2004.
- (21) Garvin DA. Building a learning organization. *Harv Bus Rev* 1993; 71(4):78-91.
- (22) Grundy SM, Benjamin IJ, Burke GL, Chait A, Eckel RH, Howard BV et al. Diabetes and Cardiovascular Disease : A Statement for Healthcare Professionals From the American Heart Association. *Circulation* 1999; 100(10):1134-1146.
- (23) Williams R, Herman W, Kinmonth AL, Wareham NJ. The evidence base for diabetes care. Chichester: John Wiley & Sons, Ltd., 2002.
- (24) McDermott R, Tulip F, Schmidt B, Sinha A. Sustaining better diabetes care in remote indigenous Australian communities. *BMJ* 2003; 327(7412):428-430.
- (25) Renders CM, Valk GD, Griffin S, Wagner EH, Eijk JT, Assendelft WJ. Interventions to improve the management of diabetes mellitus in primary care, outpatient and community settings. *Cochrane Database Syst Rev* 2001;(1):CD001481.
- (26) O'Connor PJ, Desai J, Solberg LI, Reger LA, Crain AL, Asche SE et al. Randomized trial of quality improvement intervention to improve diabetes care in primary care settings. *Diabetes Care* 2005; 28(8):1890-1897.
- (27) Renders CM, Valk GD, Franse LV, Schellevis FG, Van Eijk JT, Van Der WG. Long-term effectiveness of a quality improvement program for patients with type 2 diabetes in general practice. *Diabetes Care* 2001; 24(8):1365-1370.
- (28) Renders CM, Valk GD, Franse LV, Schellevis FG, Van Eijk JT, Van Der WG. Long-term effectiveness of a quality improvement program for patients with type 2 diabetes in general practice. *Diabetes Care* 2001; 24(8):1365-1370.
- (29) O'Connor PJ, Desai J, Solberg LI, Reger LA, Crain AL, Asche SE et al. Randomized trial of quality improvement intervention to improve diabetes care in primary care settings. *Diabetes Care* 2005; 28(8):1890-1897.
- (30) Commonwealth Department of Health and Ageing. Healthy for Life.
<http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-oatsih-contact-div-hcsb.htm#pcds> . 2005. Commonwealth Department of Health and Ageing. 5-3-2006.

Appendix 1: Services included in the Audits

As already noted, the audit was based on the Service standards appearing in the CARPA 4 Guidelines which are summarised in the table below:

Services included in the Diabetes Audit

Diabetes Services	Frequency (months)	Diabetes Services	Frequency (months)
Basic measurements		Investigations	
Weight	3	Urine-Dipstix	3
Height	Once only	ACR	12
BMI	12	BSL(finger prick or venous)	3
Waist circumference	3	Fasting lipids	12
BP	3	Creatinine	12
Eyes		HbA1c	6
Visual acuity	12	Total cholesterol	12
Cataracts	12	Counselling	
Fundi (dilated pupils)	12	Diet	3
Ophthalmologist	24	Activity	3
Feet		Smoking	3
Check done	3	Alcohol	3
Sensation	3	Diabetes control and medications	3
Peripheral pulses	3	Immunisations	
Pressure areas	3	Flu vaccination	12
Infections	3	Pneumo vaccination	5 years

Services included in the Well Person's Check audit

Scheduled Services	Frequency	Scheduled Services	Frequency
Basic measurements		Immunisation	
Weight	*	Pneumo vaccination	Every 5 years
Height	once in adult life	Counselling	
BMI	*	Diet	*
Waist circumference:	*	Exercise	*
BP	*	Smoking	*
Urine - Dipstix	*	Alcohol	*
BSL	*		

* = once in 12 months

Appendix 2:

Improvements in delivery of diabetes services over the study period

Process item	Scheduled interval (months)	Round 1	Round 2	Round 3
		% of patients receiving services		
Basic measurement				
Weight	3	47%	43%	62%
Height	Any time	32%	48%	69%
BMI	12	16%	20%	46%
Waist circumference	3	23%	28%	54%
BP	3	63%	63%	76%
Eye check				
Visual acuity	12	40%	42%	57%
Cataracts	12	28%	35%	24%
Fundi (dilated pupils)	12	34%	36%	31%
Ophthalmologist review	24	34%	40%	53%
Feet check				
Check done	3	20%	23%	57%
Sensation	3	9%	12%	46%
Peripheral pulses	3	8%	13%	47%
Pressure areas	3	7%	11%	43%
Infections	3	8%	12%	27%
Laboratory investigations				
BSL (finger prick or venous)	3	61%	51%	67%
HbA1c	6	41%	60%	72%
Total cholesterol	12	56%	70%	73%
Urine – Dipstix	3	20%	24%	47%
Creatinine	12	65%	67%	74%
ACR	12	54%	53%	61%
Counselling / advice				
Diet	3	15%	23%	34%
Activity	3	13%	22%	34%
Smoking	3	10%	21%	29%
Alcohol	3	9%	21%	31%
Diabetes medications	3	10%	26%	33%
Immunisations				
Influenza vaccination	12	54%	46%	83%
Pneumococcal vaccination	5yrs	73%	71%	80%